IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Shunpei Yamazaki, et al.	Art Unit	: 2813
Serial No.	: 09/451,665	Examiner	: Laura Schillinger
Filed	: November 30, 1999	Conf. No.	: 9359
Title	: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF		

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REPLY TO ACTION OF JANUARY 3, 2007

Claims 1, 2, 4, 5, 7-13, 15, 16, 18-23, 25, 26, 28-34, 36, 37, 39-81 and 83 are pending. Claims 12, 13, 15, 16, 18-23, 25, 26, 28-34, 36, 37 and 39-81 have been withdrawn, leaving claims 1, 2, 4, 5, 7-11 and 83 under consideration with claim 1 being independent.

Claims 1, 2, 4, 5 and 7-11 have been rejected as being anticipated by Farrenkopf (U.S. Patent No. 5,889,315). Applicant again requests reconsideration and withdrawal of this rejection because Farrenkopf does not describe or suggest forming a crystalline semiconductor film on an insulating surface or introducing a dopant impurity into the crystalline semiconductor film such that a peak of a concentration profile of the dopant impurity is located in an insulating film formed on the crystalline semiconductor film and over which a gate electrode is formed, as recited in claim 1.

First, while the rejection appears to assert that the lower epitaxial layer 22 (which the rejection equates with the recited substrate) is formed on an insulating surface, this is not the case. Rather, the layer 22 is formed on a conductive substrate 20 having a resistivity of 5-50 (typically 20) ohm-cm. See Farrenkopf at col. 8, lines 20-31.

In response to this argument, the final action states the following:

> Applicant argues that layer 22 is not formed on an insulating surface and that the substrate surface is conductive; this is incorrect – see Col. 20., lines 50-60- teaching that oxide 20 is formed on the substrate.

Applicant agrees that this passage describes, with reference to Fig. 9a, formation of a layer 150 of silicon oxide along the top of substrate region 20. However, at col. 21, lines 17-25, Farrenkopf states, with reference to Fig. 9e, that the oxide layer 150 is removed and epitaxial

layer 22 is then deposited. Accordingly, the epitaxial layer 22 (which the rejection equates with the crystalline semiconductor film recited in claim 1) cannot be said to be formed on the oxide layer. Thus, since epitaxial layer 22 is formed directly on the conductive substrate 20, formation of the epitaxial layer 22 does not constitute "forming a crystalline semiconductor film on an insulating surface," as recited in claim 1, and the rejection should be withdrawn.

Second, while the rejection asserts that Farrenkopf teaches introducing a dopant impurity through the oxide 168, the rejection appears to ignore the further recitation in claim 1 that the dopant impurity is introduced into the crystalline semiconductor film (which the rejection equates with the lower epitaxial layer 22). Moreover, in presenting arguments about the concentration profile of the dopant impurity, the rejection acknowledges that the dopant is not introduced into the layer 22.

In response to this argument, the final action states the following:

> Applicant argues that the impurities are not introduced into the crystalline semiconductor insulating film – however this is not persuasive because the mask oxide has holes which expose the layer to impurities.

As best understood, this argument is to the effect that introducing an impurity through holes in the oxide 168 constitutes introducing a dopant "through" the insulating film such that a peak of a concentration profile of the dopant impurity is located in the insulating film, as recited in claim 1. Applicant disagrees, since introducing the dopant through a region that does not include the oxide 168 does not constitute introducing "through" the oxide 168.

Moreover, the oxide 168 cannot constitute the insulating film recited in claim 1 since, as noted by Farrenkopf at col. 22, line 25, the oxide 168 is removed. As such, the oxide 168 cannot be said to be an insulating film over which a gate electrode is formed, as recited in claim 1.

For at least these reasons, the rejection should be withdrawn.

Claims 7 and 11 have been rejected as being unpatentable over Farrenkopf in view of Takemura (U.S. Patent No. 5,403,762). Applicant requests reconsideration and withdrawal of this rejection because Takemura does not remedy the failure of Farrenkopf to describe or suggest the subject matter of claim 1.

Applicant submits that all claims are in condition for allowance.

No fee is believed to be due in connection with the filing of this paper on the Electronic Filing System (EFS). In the event that any fees are due, please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

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